

CSIR IN MEDIA



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Mass awareness movement necessary to produce green biofuel from waste cooking oil: Dr Jitendra Singh

CSIR-IIP

05th June, 2022



Prime Minister Narendra Modi is leading the global climate movement and the World is ready to be led by India in its fight against climate change- a concern that like the COVID pandemic; knows no borders, respects no wealth or any other artificial human division. The responsibility to equip us to fulfil this leadership role lies on the shoulders of women and men of our scientific community. The Union Minister Dr Jitendra Singh made this statement while addressing scientists at the Indian Institute of Petroleum at Dehradun today.

The Union Minister of State (I/C) Science & Technology; Minister of State (I/C) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh said that it was a happy coincidence on the World Environment Day that he was at an institution that represents the commitment of a modern and new India to protect the environment and find alternate indigenous sources of energy.

The Union Minister said that the last 8 years have witnessed the Indian crusade against climate change. We have already achieved our commitment of 40% energy production from renewable sources, way ahead of the 2030 Paris Agreement target.

Dr Jitendra Singh added that Prime Minister Shri Narendra Modi is leading the global climate movement and other world leaders have followed suit. He added that apart from the thrust on renewable energy from solar and hydel, the Prime Minister announced major strides in Hydrogen energy from the ramparts of the Red Fort recently. The Minister said that this lays out the roadmap of our collective intention to fight for preserving the environment.

As a science researcher himself, the Union Minister said, one must speak with evidence. The Minister said that the project by CSIR-IIP for creating bio-diesel from waste cooking oil is one of many examples at the CSIR lab which demonstrate our national intent.

The Union Minister urged the scientific community to work towards making it a mass movement. Dr Singh said it must dawn on our people that they can make Rs 30 per litre from a waste cooking oil that they routinely throw out.

The Minister added that we know now that we throw out more carbon than we need for our energy. Innovative ways to use this waste would meet the twin goals of 'Atmanirbhar Bharat' and Make-in-India. The curiosity engendered in the masses would lead to awareness and that will lead to the application of science and ease of living.

Dr Jitendra Singh said that after a long time, the political leadership and scientific community are working in tandem. The government is guided in all its actions by scientific priorities. The Minister added that the Research community must come together with academia and industry to be useful to the common people in their fight to secure dignity.

The Union Minister called on the scientists to work closely with their stakeholders in government agencies and private entities. He said that it has become a practice in the Union Government to hold inter-ministerial meetings to create synergy. Dr Singh said that the atomic energy sector is a prime example of such collaboration. The Union Minister added that India is now a hub for the start-up ecosystem. However, he cautioned that we must not remain limited to IT-enabled services and that we must be open to the untapped opportunities

in the Agrotech sector. Dr Jitendra Singh said that it is clear that the world is facing a triple challenge: the earth is heating up faster than expected, we are losing habitat and species diversity; and the pollution continues unabated. He concluded by saying that, as we look towards the centenary of our freedom 25 years from now, we must work for the cause of generating clean energy cost-effectively.

{ **AROMA MISSION PROJECT LED BY CSIR-CIMAP** }

India becomes one of the 'largest exporters' of lemongrass

Aakash Ghosh

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LUCKNOW : From being one of the largest importers of lemongrass a few years back, India has now become one of the largest exporters in the world, courtesy, the 'Aroma Mission' project led by CSIR-CIMAP, Lucknow.

According to Dr Prabodh Kumar Trivedi, director of CSIR-CIMAP, "About 1000 tonnes of lemongrass are produced every year, and out of it, 300 – 400 tonnes are exported. Thanks to the 'Aroma Mission' project led by CSIR-CIMAP, Lucknow. The mission also syncs with the PM's mission to make India 'Atmanirbhar Bharat,' as the Council of Scientific and Industrial Research (CSIR) has made important contributions to the establishment, fostering, and positioning of the country's essential oil-based aroma industry. It benefited the industry.



Lemongrass

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farmers, and next-generation businesses, besides, also boosting the export of lemongrass over the time."

"During the Covid-19 pandemic, the demand for disinfectants skyrocketed which has significantly increased the demand for lemongrass across the world. As per the CSIR-CIMAP, Lucknow, the global market of lemongrass was USD 38.02 million in 2020 which is expected to grow from USD 41.98 million in 2021 to 81.43 million by 2028," said Dr Trivedi.

"In India, lemongrass cultivation became widely popular due

to its fewer challenges in farming. It can be easily grown in drylands and even in areas frequently affected by drought or insufficient rainfall. Inherently tolerant to moisture stress, it grows very well under moisture deficient conditions including in areas such as Vidarbha, Bundelkhand and Marathwada regions. Mostly, it is grown in Western Ghats including Kerala, Maharashtra, UP, Andhra Pradesh, Karnataka, Odisha and in several North-Eastern states. Interestingly, there is no risk of damage from animals because the essential oil present in the leaves makes it unpalatable to the wild or domestic animals," he said.

"This crop under Aroma Mission has been highly successful in areas close to forests, tribal lands and places like Bundelkhand where Annapratha (leaving domestic animals in fields) is a common practice," he said.

1.2m trisonic wind tunnel at NAL completes 55 glorious years

CSIR-NAL

05th June, 2022

The National Aerospace Laboratories (NAL) on Sunday commemorated the 55 years of the 1.2 metre trisonic wind tunnel which is the only industrial wind tunnel in the country providing high-speed aerodynamics data for the national aerospace programmes in both civil and military sectors.



The facility, which was built in Bengaluru between 1963 and 67 by the Council of Scientific and Industrial Research (CSIR), has been a test facility for many missiles, launch vehicles and aircraft developed by the Defence Research and Development by the Defence Research and Development Organization (DRDO) and Indian Space Research Organization (ISRO).

Characterisation of Isro's launch vehicles such as ASLV, PSLV, SLV, SSLV, GSLV, RLV, and Gaganyaan programmes were also carried out at the facility. That apart, India's first Light Combat Aircraft (LCA-TEJAS) was conceived at this facility and many weapon integration programmes on LCA, Mirage-2000, Sukhoi-30, Jaguar, and MiG aircraft were also successfully carried out here.

“This facility has completed 55 years of glorious service to the nation and has crossed the milestone of 55,000 blowdowns which is a very commendable achievement indeed. The facility shall continue to meet the experimental aerodynamic data requirement of future programmes,” the NAL said in a statement.

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National Metallurgical Lab signs recycling agreement with Puna's Recy Energy

CSIR-NML

02nd June, 2022

Government-owned CSIR-National Metallurgical Laboratory entered into an agreement with Pune-based Recy Energy, to transfer a breakthrough technology for recycling scrap/waste/used lithium-Ion batteries.



S.K. Pal, head - Research Planning & Business Development Division, CSIR-NML and

Masood Khajenoori, Founder & CEO, Recy Energy inked the technology transfer agreement on May 25 in presence of other senior officials.

The burgeoning automotive and transport sector has been surging ahead worldwide, witnessing sharp growth in the realm of Lithium battery based electrical vehicles across developed and emerging nations, it said in a release.

India generates over 50,000 tonnes of lithium battery waste every year, which is expected to increase threefold by 2025. While the customer's lucrative demands and stringent environmental regulations ensue to develop a sustainable technology for Lithium battery recycling.

Nonetheless, CSIR-NML comes up with a waste to wealth creation technology that addresses all the global challenges that are prevailing at present. Khajenoori mentioned that their quest for a universal technology which is capable of treating all types of lithium ion batteries has ended with this technology transfer agreement and is poised to help India in fulfilling goals of the Swachh Bharat Mission and the Smart Cities initiative. This indigenous technology shall

pave for extraction of battery grade Nickel, Lithium, Cobalt, Manganese apart from Copper, Aluminium and rejuvenated graphite, as well as recycling of solvents used in the process.

Sanjay Kumar, Head-MER Division, CSIR-NML mentioned the need of leveraging a universal technology in battery recycling holds the key to the process economics and sustainability.

We are using green chemistry to protect environment: CDRI top scientist

CSIR-CDRI

05th June, 2022

“The field of ‘green chemistry,’ or the development of chemical products and processes that reduce or eliminate the production of hazardous substances, has advanced rapidly in recent decades, and pharmaceuticals have played a significant role’ The Central Drug Research Institute (CDRI), Lucknow, is doing its bit to protect the environment through its ‘green chemistry’



approach for drug discovery and development by avoiding excessive use of harmful chemicals.

Dr Atul Kumar, CDRI’s chief scientist and head, medicinal process, (chemistry division) made the statement on the occasion of the World Environment Day on Sunday. He also explained the ‘green chemistry’ approach.

“CSIR-CDRI Lucknow is committed to protecting the environment through its ‘green chemistry’ approach for drug discovery and development. We are trying to avoid excessive use of harmful chemicals and multistep reactions. It is a process of manufacturing medicines that is less toxic, cost-effective and generates no waste and thus poses no threat to the environment,” Kumar said.

“The pharmaceutical industry produces significant amounts of waste products and pollutants that harm the environment and health. The field of ‘green chemistry,’ or the development of chemical products and processes that reduce or eliminate the production of hazardous substances, has advanced rapidly in recent decades, and pharmaceuticals have played a significant role,” he added.

He mentioned some of the achievements of CSIR-CDRI in this direction and cited the synthesis of Arteether used for the treatment of malaria and 'smart drug' Modafinil (used in the treatment of excessive sleepiness caused by sleep apnea, narcolepsy).

He said that the concept of 'green chemistry' came into existence in the 90s after which the institute started a programme to develop new green and sustainable processes for creating new active pharmaceutical ingredients (APIs) and new drugs.

NEERI's emission testing lab for green crackers to be set up in Sivakasi

CSIR-NEERI

05th June, 2022

Fireworks manufacturers along with National Environmental Engineering Research Institute (NEERI) of Council of Scientific and Industrial Research (CSIR) will soon set up an emission testing laboratory for green fireworks products here.

The laboratory would come up at a cost of ₹ 7.50 crore -- ₹ 4.50 crore contribution by Central Government and ₹ 3 crore by manufacturers.

“We have bought five acres of land near Peranaickkenpatti on Sivakasi-Vembakottai Road for this purpose,” president of Tamil Nadu Fireworks and Amorges Manufacturers’ Association (TANFAMA), president P. Ganesan, told The Hindu.

At present, the manufacturers were finding it difficult to send their products to NEERI’s laboratory in Nagpur for conducting emission test. “Already around 800 units have entered into agreement with NEERI for producing green crackers and every unit is sending multiple products for testing,” he said.

Stating that NEERI has got only two chambers for testing fireworks products, Mr. Ganesan said that the facility had the limitation in conducting test for only four products a day. Hence, there was delay in certification of the fireworks products.

“We have proposed to set up 10 chambers in Sivakasi, so that 20 products can be tested each day,” Mr. Ganesan said. Till then, in order to help the manufacturers, NEERI along with TANFAMA has proposed to create a facility of lifting samples from the manufacturers at Sivakasi every week for sending them to Nagpur. Meanwhile, TANFAMA has organised a camp for signing memorandum of understanding with fireworks units in Sivakasi on June 9 at TANFAMA office building.

A team of nine scientists from NEERI would be present at the camp.

Stating that manufacturing of green crackers has been made mandatory by the Supreme Court for which NEERI has come up with formulae, Mr. Ganesan said that a facilitation centre for signing memorandum of understanding with NEERI would be set up at TANFAMA office.

The Central Government has also sanctioned ₹ 7.50 crore for setting up a laboratory for testing chemical characteristics in Sivakasi, he added.

CSIR-IITR marks World Environment Day with two-day celebration

CSIR-IITR

05th June, 2022

The Indian Institute of Toxicology Research (CSIR-IITR) Lucknow is observing the World Environment Day over two days starting from Saturday.



Delivering the 26th Dr C R Krishnamurthy Memorial Oration at CSIR-IITR, professor Rup Lal, a molecular biologist and NASI senior scientist and platinum jubilee fellow at The

Energy and Resources Institute (TERI), Delhi, said, “Understanding microbiome science can help us handle human health and the environment more effectively. Furthermore, studying the environment microbiome, particularly microbial populations from extreme environments, can aid efforts to reduce pollution.

The event was presided over by professor SK Barik, director, CSIR-IITR, who highlighted the contributions of CSIR to the environment. He stressed that environmental protection is a shared responsibility.

On this occasion, CSIR-IITR also signed a memorandum of understanding (MoU) with the Institute of Pesticide Formulation Technology (IPFT), Gurugram. The MoU was signed by Dr Barik and Dr Jitendra Kumar, director, IPFT. Under the MoU, both institutions have agreed to share facilities and expertise for developing newer nano-agrochemicals and assessing their toxicity/safety.

The institute also released its annual report on the Pre-Monsoon Assessment of Ambient Air Quality in Lucknow City and announced the prize winners of a painting competition for

children of CSIR employees, held earlier in the week as part of the celebrations. Dr N Manickam, chief scientist, CSIR-IITR, spoke about the origins of Dr CR Krishnamurti Memorial Oration and welcomed the day's chief guest. The vote of thanks was given by Er AH Khan, senior principal scientist, CSIR-IITR.

औषधीय पौधे हड्डिजोड़ और निरगुंडी मिटाएंगे जोड़ों का दर्द

विनोद राणा

पालमपुर (कांगड़ा)। हिमाचल प्रदेश में पाए जाने वाले औषधीय पौधे हड्डिजोड़ और निरगुंडी जोड़ों के दर्द का निवारण करेंगे। वैज्ञानिक एवं प्रौद्योगिकी अनुसंधान संस्थान (सीएसआईआर) पालमपुर ने शोध कर इन औषधीय पौधों से दर्द निवारक दवाई तैयार कर ली है।

इस दर्द निवारक दवाई का पशुओं पर सफल प्रयोग हो चुका है, जबकि अब इंसानों पर इसके इस्तेमाल की प्रक्रिया जल्द शुरू की जा रही है।

जानकारी के अनुसार हड्डियों के जोड़ों के दर्द से निजात दिलाने के लिए सीएसआईआर एवं हिमाचल जैव संपदा प्रौद्योगिकी संस्थान (आईएचबीटी) पालमपुर ने पारंपरिक औषधीय पौधों से एक दवाई तैयार की है। सीएसआईआर संस्थान में इस दवाई के शोध की

सीएसआईआर पालमपुर ने
शोध कर तैयार की दर्द
निवारक दवाई



सीएसआईआर की तैयार दवाई

देखरेख कर रहे डॉ. नरेंद्र त्रिपुडे ने कहा कि यह दवाई क्रीम और पाउडर दोनों रूप में मिलेगी। इस दवा के लगाने और खाने में कोई दुष्प्रभाव नहीं होगा। इस दवाई की तकनीक जालंधर की एक कंपनी को हस्तांतरित की गई है। उम्मीद है

जालंधर की कंपनी को हस्तांतरित
की तकनीक: निदेशक



सीएसआईआर पालमपुर के निदेशक डॉ. संजय कुमार ने बताया कि जोड़ों के दर्द से निजात दिलाने के लिए संस्थान ने औषधीय पौधों से एक शोध कर दवाई तैयार की है। दवाई की तकनीक कंपनी को हस्तांतरित कर दी गई है।

कि संस्थान करीब दो माह के अंदर राजीव गांधी आयुर्वेदिक स्नातकोत्तर शिक्षण संस्थान पपरोला में इस दवाई का प्रयोग इंसानों पर करेगा। कंपनी इस दवाई को बना तो सकती है, लेकिन सीएसआईआर जब तक इंसानों पर दवाई का सफल प्रयोग नहीं होता, तब तक कंपनी इस दवा को बाजार में नहीं उतार सकती। बताया जा रहा है कि इसमें करीब अभी छह माह लग सकते हैं। दवाई का नाम और कीमतें कंपनी तय करेगी। संवाद

CSIR-NBRI

02nd June, 2022

{ PROFITABLE VENTURE }



Besides its religious and cultural significance, lotus has a lot of nutritional value too. SOURCED

Manipur's rare lotus now at NBRI

Aakash Ghosh

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LUCKNOW: The National Botanical Research Institute (NBRI) of Lucknow has about 20 varieties of lotus flowers including the rare 108 petal lotus, usually found in Manipur.

"We collected this 108-petal lotus from its natural habitat and planted it on our campus garden where it is now growing naturally. We also have planted 1000 petal lotus, but it's yet to grow," said professor SK Barik, director, NBRI, Lucknow.

"The number of petals in Manipur is usually greater than 100, and we have planted them here in Lucknow where they are yet to fully bloom. We also have planted two plants in waterlily pond and 9 plants in water tubs. We have 20 other varieties of lotus flowers that are popular in the market. Besides, we have also collected several landraces

from different parts of U.P., Assam, and MP," he added.

"Besides its religious and cultural significance, lotus has a lot of nutritional value too. Our focus is not only on expanding the number of varieties but also on improving its nutritional value, which is critical in the pharmaceutical industry. Even though it is our national flower, it is currently grown only in a limited area. We aim to popularise and scale up its commercialization so that people who grow it make more profit than before," NBRI director said.

"Sacred Lotus grows all over India, displaying vast morphological diversity with many racial variants in shapes, sizes, and shades of pink and white flowers with 16-160 petals. The number of petals in most lotus races in northern India, particularly in the Gangetic plains, ranges from 16 to 36," said Dr KJ Singh, senior scientist, NBRI.

Grooming Academic Publishing Skills Via A Short-Term Training Course 1- 30 June 2022

CSIR-NIScPR

01st June, 2022

New Delhi: The Research Journals Division of CSIR-National Institute of Science Communication and Policy Research (NIScPR), New Delhi, is organizing the Vritika Research Internship on “Grooming academic publishing skills via a short term training course” during 1st June to 30th June 2022. The internship is sponsored by the Science & Engineering Research Board



(SERB), Department of Science and Technology (DST), Govt of India, under Accelerate Vigyan Vritika scheme. The inaugural program began with lighting of the lamp led by Prof. Ranjana Aggarwal, Director, CSIR- NIScPR.

Prof Ranjana Aggarwal, Director, CSIR-NIScPR in her inaugural address, she emphasized that scholarly communication is the lifeline for a researcher. She added that the internship program will give an opportunity to the participants to learn about scholarly and popular science writing. She also highlighted about the rapid changes taking place in the scholarly communication landscape.

R S Jayasomu, Chief scientist, Head Jigyasa and RHMD, & Editor, Indian Journal of Experimental Biology, (IJEb), CSIR-NIScPR, in his address said that learning the art and science of research paper writing early on in the career is the very important for young researchers. He added that the scholarly publishing process has many challenges and noted that there are only a handful of indexed Indian publications. Dr. G Mahesh, Senior Principal Scientist and Head Research Journals Division stated that CSIR- NIScPR offers the perfect environment for conducting internship where all the resources are available under one roof.

Dr N K Prasanna, Senior Scientist and the Scientific Editor Indian Journal of Biochemistry and Biophysics (IJBB), and the coordinator of the Vritika Research Internship, delivered the introductory address and gave a brief about the programme. She said the objective of the Vritika Research Internship is to encourage and nurture scientific temper among the budding scholars and groom them to acquire basic skills in research communication and gets a 'sense of pride' being an 'informed citizen' of this great nation with a historical tradition.

The Research internship was attended by 5 participants from both PG and PhD streams from various universities and colleges in offline mode. This internship provides necessary knowledge on converting research data into an indexed publication, exposure to processing of research manuscripts from preparation to publication, to know about the techniques behind copyediting, writing research paper and literature summary and seeks to foster a strong interest in scientific and engineering research as well as providing technical insight into the fields of science and engineering.

CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), a premier science publishing institute in India, has also been playing a key role in training of young researchers by conducting several workshops, Internships, and training programs in diverse fields.

The month-long intense internship program has lectures, practical, lab visits, and regular interactive sessions with CSIR-NIScPR scientists, Editors, and science communicators. It is expected that by the end of the program the students will be adequately skilled with latest scholarly publishing methods and best practices that would benefit them in their research career in the long run.

CSIR-NBRI

01st June, 2022

{ CSIR-NBRI INITIATIVE }

Now, giant Amazon water lily at Lucknow's NBRI

Aakash Ghosh

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LUCKNOW : The CSIR-National Botanical Research Institute (NBRI) Lucknow has planted the world's largest water lily in its garden.

NBRI officials expect that the floating leaves of this unique aquatic plant, the giant Amazon water lily (*Victoria amazonica*) would soon be available for public viewing.

"We are keeping an eye on the plant right now. Once it fully blooms, we will open it for the public," said Dr KJ Singh, senior scientist, CSIR-NBRI, Lucknow.

Currently, only the AJC Bose Indian Botanical Garden in Howrah and a few gardens in south India have these species. "This would be the first of its kind not only in Lucknow but also in north India," Dr Singh said.



"Giant water lilies with large floating leaves can reach up to 2.4 metres in diameter with a thick rim up to 20 centimetres high. These leaves are strong enough to support the weight

of a small child," he added.

The 65 acres of CSIR-NBRI's botanical garden, is a repository of more than 6000 species or cultivars (plant variety that has been produced in cultiva-



Giant water lilies with large floating leaves can reach up to 2.4 metres in diameter with a thick rim up to 20 centimetres high. These leaves are strong enough to support the weight of a small child.

SOURCED

tion by selective breeding) of native and exotic plant groups.

Source of income

Water lilies are the most popu-

lar aquatic plant and have huge horticulture market value. Majority of the varieties in horticultural trade are of foreign land especially, Thailand, China and Australia.

"We at CSIR-NBRI are trying to make Indian hybrids through our research so that it can be popularised and commercialised in the Indian market," Dr Singh said.

"This will also make India self-reliant and import substitution. Luckily, we are now witnessing a water lily wave, probably due to the presence of a lot of lilies in the Indian markets. This is a good sign," he added.

He also said that CSIR-NBRI aims to collaborate with people associated with horticulture. "We also have plans to develop societies having people with similar interests. We will also organise Indian water lily festivals," he added.

सीएसआईआर-सीडीआरआई में उन्नत स्पेक्ट्रोस्कोपिक तकनीकों में कौशल विकास पर कोर्स प्रारम्भ

कैनविज टाइम्स संवाददाता

लखनऊ। सीएसआईआर सीडीआरआई में उन्नत स्पेक्ट्रोस्कोपिक तकनीकों में कौशल विकास पर सर्टिफिकेट कोर्स प्रारम्भ सीएसआईआर एकीकृत कौशल पहल के तहत, उन्नत स्पेक्ट्रोस्कोपिक तकनीकों पर आठ सप्ताह का कौशल विकास पाठ्यक्रम सीएसआईआर केंद्रीय औषधि अनुसंधान संस्थान में 30 मई से 22 जुलाई तक संस्थान के परिष्कृत विश्लेषणात्मक उपकरण सुविधा द्वारा आयोजित किया जा रहा है। सैफ, सीएसआईआर सीडीआरआई पिछले 46 वर्षों से अधिक समय से विश्लेषणात्मक सेवाएं प्रदान कर रहा है तथा विज्ञान और प्रौद्योगिकी विभाग भारत सरकार द्वारा सत्तर के दशक के मध्य में स्थापित ऐसी पहली चार सुविधाओं में से एक है। कार्यक्रम के समन्वयक एवं प्रधान वैज्ञानिक डॉ संजीव के शुक्ला ने बताया कि इस दो महीने के पाठ्यक्रम का उद्देश्य ऐसे मानव संसाधन को तैयार करना है जो उन्नत स्पेक्ट्रोस्कोपिक तकनीकों से प्राप्त जानकारी के संचालन, नियमित रखरखाव



एवं उनके विश्लेषण में पारंगत हो। इस प्रशिक्षण के दौरान अत्याधुनिक उपकरणों जैसे एनएमआर, मास, एचपीएलसी, एफटी आईआर, यूवी विज की कार्यप्रणाली से प्रतिभागियों को अवगत कराया जाएगा। यह प्रशिक्षण कार्यक्रम इन तकनीकों में बुनियादी और उन्नत प्रयोगात्मक विधियों पर सैद्धांतिक, व्यावहारिक प्रशिक्षण के बारे में ज्ञान प्रदान करेगा साथ ही औषधि अनुसंधान की प्रक्रिया में महत्वपूर्ण अणुओं की संरचनात्मक जानकारी को स्पष्ट करने पर समझ और व्यावहारिक अनुभव प्रदान करेगा। डॉ के वी शशिधर वरिष्ठ प्रधान वैज्ञानिक प्रमुख सैफ सीएसआईआर सीडीआरआई ने प्रतिभागियों का स्वागत किया और कहा सीएसआईआर केंद्रीय औषधि अनुसंधान

संस्थान में एसएआईएफ की अवधारणा जैविक विज्ञान और रसायन के अनुसंधान क्षेत्र में लगे वैज्ञानिकों, अनुसंधान कर्ताओं की आवश्यकताओं के अनुरूप विकसित हुई है। यह विभिन्न विश्वविद्यालयों, सरकारी

अनुसंधान एवं विकास संस्थानों और उद्योग के शोधकर्ताओं को सहायता प्रदान करता है, जिनके पास ये महंगे और परिष्कृत विश्लेषणात्मक उपकरण नहीं हैं। उन्होंने प्रतिभागियों को इस पाठ्यक्रम का अधिकतम लाभ प्राप्त करने के लिए अगले दो महीनों का सर्वोत्तम तरीके से उपयोग करने की सलाह भी दी। इस इंटरैक्टिव परिचयात्मक सत्र के दौरान, प्रतिभागियों ने विस्तार से चर्चा किया कि वे इस पाठ्यक्रम के लिए क्यों रुचि रखते हैं, उनकी अपेक्षाएं क्या हैं और वे भविष्य में इस पाठ्यक्रम से प्राप्त ज्ञान का उपयोग कैसे करना चाहते हैं। पाठ्यक्रम के समनायक डॉ संजीव के शुक्ला ने बताया कि इस कौशल विकास कार्यक्रम की मुख्य विशेषताओं में शामिल हैं।



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